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ABSTRACT

The study investigated retention of gains in reading/language skills after one year by 378 eighth-grade students in 18 health studies classrooms. Six classrooms were assigned to each of three groups, two experimental and one control, taught by health science teachers who were: (1) trained in reading/language techniques; (2) not trained in reading/language techniques, but using a revised health curriculum based on reading techniques; or (3) neither specially trained in reading nor using the reading-based curriculum. All students completed health and reading skills items of the Basic Skills Inventory, a Rasch scaled assessment instrument developed by the Proficiency Assessment Systems and Services Center of the Los Angeles County Office of Education. Pretest-posttest gains during the course were compared with pretest-posttest gains the following year. Neither experimental group retained significant posttest gains, nor did they retain a significant advantage over the control group. (LPG)

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MEASURING LEARNING RETENTION AFTER PROGRAM FUNDING

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ABSTRACT

To determine if student achievement in reading and language retained sustained effects after program funding, the researchers tested both experimental and control students a year later to obtain results. After testing all three groups (two treatments and one control) the researchers concluded that although differences were noted, they were not significant, leaving more questions about the efficacy of limited or specially funded programs.

MEASURING LEARNING RETENTION AFTER PROGRAM FUNDING

Framework of the Study

In response to widespread concerns about declining student achievement, the National Academy of Education Committee on Testing and Basic Skills (1978) cited changes in school practices which contributed to the decline, along with recommendations for changes to reverse the trend. Among other suggestions, they recommended a focus on basic skills infused into broader curricular areas.

During much of the same period, Educational Testing Services (1984) reported that the largest declines in achievement were in the areas of vocabulary and reading, and were attributable to a decrease in academic emphasis.

Hunt (1983), in reporting the findings of the Task Force on Education for Economic Growth, Education Commission of the States, echoed these same concerns and called for curriculum renewal that increased the instructional time in key areas including the basic skills.

Vacca (1975) defined a functional reading strategy in content areas as ". . . one that allows classroom teachers to integrate skills instruction with content understanding" (p. 108). He further stated, however, that little empirical evidence was available to guide the development of functional reading approaches in content areas.

Research findings are prevalent in reporting short term gains. Fielding, Kameenui and Gersten (1983) looked at teaching strategies in social science for secondary students and concluded that consistent effects on maintenance measures were in practice immediately following the instructional period but students reverted to more immature behavior the longer time lapsed between teaching and testing.

Armbruster, Echols and Brown reported in 1983 on a study that measured student learning in relation to selected or appropriate teaching strategies.

Rosenshine (1983) sought to provide generic definitions to the key term educators and researchers were using when describing a structured teaching strategy by defining "direct instruction." Based on process/product research, Rosenshine used the term to describe the teaching strategies that emphasized reviews, presentation models, guided practice, corrections and feedback, and independent practice.

The terms cognitive instruction and metacognition are a redefinition of direct instruction by Pearson and Ley (1985).

However, these studies or papers deal with the elements of instruction for measurement and not the lasting effects to be retained by the learner over an extended period of time.

In a four-year study addressing student achievement (1981-1985) conducted in Napa, California utilizing the Madeline Hunter learning model, Jane Stallings (1986), project evaluator, noted that out of the original 502 students enrolled, only 102 remained at the end of the four-year period. Noting that 80% of the original population moved away, the remaining 20% achieved higher scores in reading and mathematics in the last year of the project over students who were in the project for the first time the final year. Stallings felt this finding suggested a long-term effect, but the sobering fact was that during the four years of the study, the project children did not achieve higher scores than did children in the control schools in either reading or mathematics (1986).

Most of the other research cited in the literature related to sustained effects pertains to either special education or Title I/Chapter I programs and, therefore, is directed for a selected audience.

Writing in the April 1986 issue of Educational Leadership, Rosenshine reports on a decade of research on explicit teaching (areas that permit well-structured strategies that define learning skills), but long-term student achievement gains are not addressed.

To know exactly which strategies to use, for which skills, and with which students requires more applied research as well as informal field-testing at the school site level.

Research Questions

To determine if student achievement in reading and language taught through the health science curriculum by non-English department teachers retained sustained effects, the following research questions were posed in the study:

1. Will students who were taught by health science teachers trained in reading/language techniques retain the gain score differential when measured one year after participating in the program? (Group I)

2. Will students who were taught health by health science teachers not trained in reading/language techniques but used the revised health curriculum based on reading techniques retain gain score differences when measured one year after participating in the program? (Group II)

3. Will students who were taught by health science teachers not trained in reading/language techniques and not given the revised health curriculum maintain the discrepancy with lower scores compared with the experimental groups one year after participating in the program? (Group III)

Methodology

The study incorporated a non-randomized control group, pretest-posttest design with an independent variable consisting of two innovative treatment strategies and a traditional control strategy; the dependent variable was the pretest-posttest difference.

Pupils in all three groups were administered the Basic Skills Inventory (BSI), a Rasch scaled assessment instrument developed by the Proficiency Assessment Systems and Services Center of the Los Angeles County Office of Education as a pretest and posttest at the beginning and the end of the first school year and at the beginning and end of the second school year to measure and compare differences one year after participating in the project.

Sample

A total of eighteen (18) eighth grade classrooms participated in the study resulting in 378 matched score comparisons. Six classrooms with a total of 126 students were experimental group I; six classrooms with a total of 120 students were experimental group II; and six classrooms with a total of 132 students constituted the control group.

Instruments

Reading and language skills in a health science related context were measured by a specially constructed form of the Basic Skills Inventory (BSI), a collection of tests spanning grades 1-12 in the areas of reading, language arts, and mathematics. The major purpose of the battery is to provide basic skills information for making pupil placement, program referral, and program evaluation decisions (Los Angeles County Office of Education, 1983).

Because all of the tests in a subject area contain items from the same Rasch calibrated item bank, scores from different levels of the inventory are from specially constructed tests made up of items selected from the bank and are directly comparable on a scale ranging from 50-800.

The BSI item banks were developed to reflect national curricular objectives in the areas presented, and, in every instance the items have been carefully scrutinized with respect to their content validity, freedom from bias, and statistical properties.

The form of the BSI employed in the current study consists of 50 items selected as having a subject or context related or appropriate to health studies, and measuring one of the communication skills targeted in the project curriculum. In a separate pilot study, its reliability, as indicated by the Kuder-Richardson Formula 20 coefficient was .90.

Results and Findings

The significance of the difference between the mean gains of the experimental and control groups was determined by applying a one-way analysis of variance followed by a two-tailed t-test for uncorrelated means (Garrett, 1958) to the data obtained from the pretest and posttest administrations of the BSI. As can be seen from an examination of Table 1, the posttest difference in favor of the experimental groups was not significant at the .05 level.

Based on the results of the statistical analysis of the data, the following conclusions were drawn:

1. Students whose teachers were trained in the basic communication skills using the revised curriculum demonstrated non-significant gains when measured one year after participating in the program. (Group I)

2. Students whose teachers were not trained in the basic communication skills but who used the revised curriculum demonstrated non-significant gains when measured one year after participating in the program. (Group II)

3. Students whose teachers were not trained and did not use the revised curriculum did not retain the discrepancy of lower test scores when compared to the experimental groups one year after participating in the program. (Group III)

Although differences were noted, they were not statistically significant and, therefore, the hoped for sustained effects were not demonstrated one year after program funding.

Educational Importance

Although the expected gains were not sustained in this study, it is important that studies of this nature be replicated to see if this is a unique experience or a trend. As evaluators of educational programs, we have a responsibility to help school districts make the best educational decisions within the given boundaries. Many more questions are left unanswered when expected outcomes are not produced. Was the teaching technique a "one-shot deal" with no other reinforcement within the school? Was the new curriculum so unique that no other subject matter could replicate the format? Did the teachers who learned the new techniques and the teachers who taught the new curriculum "teach to the test?"

These questions with their answers will contribute new insights and strengths for future programs and allow better educational planning for decision makers.

TABLE I

POSTTEST SCALED SCORE MEANS AND STANDARD DEVIATIONS FOR THE THREE GROUPS IN THE STUDY

GROUP	N	MEAN	S.D.
I	126	598.52	56.95
II	120	596.30	57.17
III	132	589.10	59.71

ANALYSIS OF VARIANCE OF POSTTEST SCALED SCORES FOR THE THREE GROUPS

SOURCE	SS	df	MS	F	P
Between Groups	5674.69	2	2837.35	1.41	n.s.
Within Groups	754612.50	375	2012.30		
Total	760287.19	377			

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